

Remarks

The claims are 1-4, with claim 1 being the sole independent claim.

Independent claim 1 has been amended to include the subject matter of cancelled claim 5.

Claim 4 has been amended to clarify the invention. Applicants submit that no new matter has been added. Reconsideration of the present claims is respectfully requested.

The Examiner objected to the drawings because he alleges that Figures 1-3 should be designated by a legend such as --PRIOR ART--. While Applicants respectfully disagree with the Examiner's position, Applicants have nonetheless prepared a Request for Approval of Drawing Changes, filed herewith, in order to effect the Examiner's requested drawing changes. Accordingly, Applicants respectfully request withdrawal of the drawing objection.

Claims 1, 2 and 5 stand rejected under 35 U.S.C. §103(a) as being obvious over Masi (U.S. Patent No. 3,844,637) in view of Hanna (U.S. Patent No. 6,174,455). Claim 3 stands rejected under 35 U.S.C. §103(a) as being obvious over Masi in view of Hanna and further in view of Bock (U.S. Patent No. 6,437,123). Claim 4 stands rejected under 35 U.S.C. §103(a) as being obvious over Masi in view of Hanna and further in view of Applicants' prior art (Figure 3 of present drawings). Applicants respectfully traverse these rejections.

Applicants again believe that a brief review of the key features and advantages of the present invention would be helpful prior to addressing the merits of the

prior art rejections. The present invention is directed to a luminescence device comprising a pair of electrodes and at least one organic compound layer. Importantly, an organic compound layer comprises (a) a mixture of a liquid crystal compound having an electronic carrier-transporting function and a phosphorescent function and (b) an organic phosphorescent compound. Because both the organic phosphorescent compound and the liquid crystal compound of the present invention have phosphorescent function, energy transfer therebetween is performed smoothly and highly effectively. By virtue of this constitution, the present inventive luminescence device achieves a higher luminescence efficiency than that achieved in conventional devices.

Masi is directed to an integrated liquid crystal luminophor display. While Masi describes a luminescence device comprising a pair of electrodes and an organic compound layer having a liquid crystal compound and a luminophor, Masi fails to teach or suggest the use of a liquid crystal compound having the presently claimed characteristics. More specifically, Masi does not teach or suggest the use of a liquid crystal compound having either of an electronic carrier-transporting function or a phosphorescent function, let alone does it teach or suggest the use of a liquid crystal compound possessing both functions. This deficiency is acknowledged by the Examiner and alleged to be overcome by the disclosure of Hanna. However, Applicants respectfully disagree.

Hanna does not remedy the deficiencies of Masi. The Examiner states that Hanna discloses some liquid crystal compounds which have both electron-transport

capability and hole-transport capability and can provide luminescence when mixed with a fluorescent material. This disclosure is not the same as a teaching of a liquid crystal compound having both carrier-transport function and phosphorescent function in and of itself. Instead, Hanna describes fluorescent function due to the presence of a fluorescent material, not due to the presence of a the liquid crystal compound having a fluorescent function. This is very different from the present invention, wherein the liquid crystal compound per se has both phosphorescent function and carrier-transport function.


Bock does not remedy the deficiencies of Masi and Hanna. In fact, Bock is cited merely for its alleged disclosure of a liquid crystal compound assuming a discotic phase so as to obtain a stable homeotropic monodomain alignment. Bock does not disclose or suggest the use of a liquid crystal material having both carrier-transport and phosphorescent function in an organic compound layer of a luminescence device.

In sum, none of the cited references, whether considered alone or in any combination, render the present inventive luminescence device obvious. There is simply no teaching or suggestion of the key features of the present invention, namely, a luminescence device comprising a pair of electrodes and at least one organic compound layer comprising (a) a mixture of a liquid crystal compound having an electronic carrier-transporting function and a phosphorescent function and (b) an organic phosphorescent compound. Accordingly, Applicants respectfully request withdrawal of the §103 prior art rejections.

This Amendment After Final Rejection is believed clearly to place this application in condition for allowance. At the very least, it reduces the number of pending claims. Its entry is therefore believed proper under 37 C.F.R. §1.116. Accordingly, entry of this Amendment After Final Rejection, as an earnest attempt to advance prosecution, is respectfully requested. Should the Examiner believe that issues remain outstanding, the Examiner is respectfully requested to contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



Attorney for Applicants
Registration No. 42,667

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200



Application No. 09/904,505
Attorney Docket No. 00684.003218

VERSION SHOWING CHANGES MADE TO CLAIMS

1. (Twice Amended) A luminescence device comprising:
a pair of electrodes, and
at least one organic compound layer including an organic compound layer
comprising (a) a mixture of a liquid crystal compound having an electronic carrier-
transporting function and a phosphorescent function and (b) an organic phosphorescent
compound.

4. (Twice Amended) The luminescence device according to Claim 1,
wherein the organic phosphorescent compound has a planar molecular skeleton.

Claim 5 has been cancelled.

RECEIVED
MAR 25 2003
TECHNOLOGY CENTER 2800